NPIC/TSSG/RED-1974-69
19 December 1969

MEMORANDUM FOR THE RECORD

25X1 SUBJECT: 15 December 1969 [redacted] Trip Report on the Image Comparison Microstereoscope

25X1 1. On this date I met with Messrs. [redacted] 25X1
25X1 [redacted] to inspect their progress on the fabrication and assembly of the ICM. The major emphasis right now is on the Upper Structure, or
25X1 Microstereoscope. When [redacted] visited [redacted] on 4 December, they 25X1
stated four subassemblies in the Upper Structure were yet to be completed mechanically and four components required optical alignment. The schedule on these is indicated below along with the results of my 15 December inspection. (Paragraphs 2&3, following, amplify this and adds information from a telephone follow-up on 12/18/69.)

MICROSTEREOSCOPE TASKS

MECHANICAL SUBASSEMBLY:

Component	Completion 4 Dec. Prediction	Completion (15 Dec. Chk.)	Problems
1. Anamorphs	12/27/69	1/3/70	Prism delivery delay from Vender
2. MES/Split Field	12/31/69	12/31/69	NONE
3. Mode Switch	12/15/69	12/22/69	Nothing Specific
4. Objectives	12/13/69	Complete	NONE

OPTICAL ALIGNMENT:

1. Anamorphs	1/3/70	1/10/70	Delivery delay
2 Zoom Lenses	12/13/69	Complete	NONE
3. Image Rotators	12/13/69	Complete	NONE
4. Objectives	12/27/69	??	Spherical Aberr. in 4X

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25X1 2 [redacted] said they would ship the anamorphic prisms on 17 December but called on that day to say they were having 25X1 "trouble with one surface." [redacted] will be calling them daily and may insist on a partial shipment in order not to threaten the schedule. Nevertheless, a 10 January 1970 alignment looks doubtful. On 25X1 15 December [redacted] said that [redacted] was experiencing continued troubles with the High Power Stereoviewer anamorphic eyepiece prisms 25X1 and [redacted] was considering going to a Swiss firm. That would be a third subcontractor attempt on these, which are about 2/3 the size of the 25X1 ICM prisms. [redacted] anticipated no serious problem making the ICM prisms 25X1 [redacted] indicates the possible need for exerting pressure on [redacted] 25X1 their subsidiary.

3. The ICM 1 4X objectives are assembled and OK However the 4 OX objectives have been found to contain spherical aberration. This was the distortion noted last spring in the prototype "double-gauss" designs of the ICM, the Advanced Stereo Rhomboids, and the Point Markers for AMS and NASA. A matching technique was worked out and the Point Marker assembly was "right on the money" the first time. On 15 December 25X1 [redacted] was in the process of separating the BC doublet portion of the ICM objective, which had been identified as the cause of the aberration. They completed this and on 18 December had eliminated improper radii (curvature) as the cause. They are now checking on possible incorrect refraction index and dispersion characteristics (the latter is the likely culprit).

4. We toured several of the assembly areas and I had an opportunity to examine the "star image" of one of the 4X objectives on an optical bench. During the tour I observed the on-going assembly of the eight condensers and such completed assemblies as various mirrors and the Mode 25X1 Switch prism. [redacted] had made a temporary assembly of the microstereoscope structure, including the zoom units (with lenses) and the anamorphics (without prisms). The anamorphic collimators and decollimators have been assembled with their lenses, but were not placed in the temporary m'scope assembly.

5. In light of recent events with the Dual Viewer, [redacted] asked me 25X1 if I planned to bring any of our maintenance personnel to study the partially-assembled ICM. This might be a worthwhile trip in February-March, 1970 as background for later servicing, but [redacted] must be respon- 25X1 sible for adjustments, etc., at least until the ICM is accepted I 25X1 mentioned that [redacted] was interested in examining the ICM in preparation for their human factors evaluation; however, a useful examination probably could not take place more than three weeks prior to expected

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shipment--which might obviate such a trip by [ ] said he was interested in the test results on the special convergence angle test device they made for [ ] on our contract--I 25X1 25X1
25X1 will check with [ ]

6. I examined the Vision Comparascope, per Mr. Lundahl's recent 25X1 request. It is a [ ] device, distributed by [ ] and primarily intended for circuit board assembly inspections. Although the demonstrator considered it outstanding in the field, the optical characteristics were quite crude compared to PI equipment. The basic viewing mode is 1X and there is no method for adjusting focus. The optional magnification feature is poorly engineered and the demonstrator apologized for it. However, the Comparascope gave me another chance to observe a type of "flicker" viewing, related to that we will soon be acquiring with the ICM. The Comparascope technique employs rotating polarizing filters, although the demonstrator could not explain the details and no drawings were immediately available. The ICM technique involves alternation of the light sources. (See attached data)

7. Early in my discussions on 15 December I inquired of [ ] 25X1 as to progress on the promised letter confirming their proposal to pay for any excess ICM costs from their fee. He stated he would be getting at it shortly, but I am somewhat uncomfortable and invite [ ] 25X1 attention and further consideration of the contact with higher [ ] 25X1 management as recommended in my last memo on this subject. I posed the possibility that the excess costs could exceed [ ] potential fee-- 25X1
25X1 Messrs. [ ] did not have an answer for that.

25X1 [ ]
Project Monitor
TSSG/RED/SRB

Distribution:
Orig - Route & File
1 - NPIC/TSSG/SC&PS
25X1 1 - [ ]
2 - RED Chronos
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